sub D7 C1

1. (Amended) A fluorescent protein comprising an 11-stranded β-barrel formed from 11 β-sheets surrounding a chromophore-containing co-axial α-helix, each of said β-sheets forming said β-barrel being joined by a loop structure to at least one other adjacent β-sheet forming said β-barrel modified such that said modified fluorescent protein incorporates a cleavage site for a protease, cleavage of said modified fluorescent protein at said cleavage site by said protease causing the alteration of at least one of the emission and excitation spectra of said modified fluorescent protein.

2. A fluorescent protein according to claim 1, being a green fluorescent protein.

3. A fluorescent protein according to claim 2, said modified fluorescent protein having said cleavage site incorporated in the loop structure joining any pair of adjacent β-sheets.

sub D7 C2

4. (Amended) A fluorescent protein according to claim 3, said adjacent β-sheets being selected from the group consisting of β-sheet pairs numbers 9 and 10, 5 and 6, and 8 and 9.

5. (Amended) A fluorescent protein according to claim 3, said modified fluorescent protein having SEQ. ID NO: 41.

6. (Amended) A fluorescent protein according to claim 1, being selected from any one of the group consisting of a blue fluorescent protein, a cyan fluorescent protein, a yellow fluorescent protein, and a DsRed fluorescent protein.

7. (Amended) A fluorescent protein according to claim 1, said cleavage site having the sequence of SEQ ID NO: 4.

25. A fluorescent protein according to claim 1, said protease being a caspase.

26. A fluorescent protein according to claim 25, said caspase being selected from any one of the group of caspase-3, caspase-8 and caspase-9.

C3 sub D7

28. (New) A modified fluorescent protein comprising:

a fluorescent protein having a loop structure, said loop structure having incorporated therein a protease cleaving site, said loop structure positioned between a first β sheet of said fluorescent protein and a second β sheet of said

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fluorescent protein wherein cleavage of said fluorescent protein at said cleavage site alters at least one of an emission spectra and an excitation spectra of said modified fluorescent protein.

29. (New) The modified fluorescent protein according to claim 28 wherein said fluorescent protein is a green fluorescent protein.

30. (New) The modified fluorescent protein according to claim 28 wherein said first β sheet and said second β sheet are selected from β sheet pairs consisting of β sheet pair 5 and 6, β sheet pair 8 and 9, and β sheet pair 9 and 10.

31. (New) The modified fluorescent protein according to claim 28 wherein said modified fluorescent protein has an amino acid sequence according to SEQ. ID NO: 41.

32. (New) The modified fluorescent protein according to claim 28 wherein said cleavage site defines a sequence according to SEQ. ID NO: 4.

33. (New) The modified fluorescent protein according to claim 28 wherein said protease is a caspase.

34. (New) The modified fluorescent protein according to claim 33 wherein said caspase is selected from a group consisting of caspase-3, caspase-8, and caspase-9.

35. (New) A fluorescent protein according to claim 3 wherein said modified fluorescent protein is selected from the group consisting of SEQ. ID NOs: 36-51, and 55.

36. (New) A fluorescent protein according to claim 1 wherein said cleavage site has a sequence of any one of the group consisting of SEQ. ID NOs: 7-13.

37. (New) The modified fluorescent protein according to claim 28 wherein said fluorescent protein is selected from the group consisting of a blue fluorescent protein, a cyan fluorescent protein, a yellow fluorescent protein, and a DsRed fluorescent protein.

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38. (New) The modified fluorescent protein according to claim 28 wherein said modified fluorescent protein has an amino acid sequence selected from the group consisting of SEQ. ID NOs: 36, 39-51, and 55.

C3 cont

39. (New) A modified fluorescent protein according to claim 1 wherein said cleavage site has the sequence selected from the group consisting of SEQ. ID Nos: 4 and 7-13.

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